

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Daniel James Winarski, Robert George Emberty, Craig Anthony Klein,
Nils Haustein

Assignee: International Business Machines Corporation

Title: Write-Once Read-Many Hard Disk Drive Using a Worm Pointer

Serial No.: 10/824,901 Filing Date: April 14, 2004

Examiner: Daniel Tsui Group Art Unit: 2185

Docket No.: TUC920040009US1 Customer No.: 65384

Austin, Texas
October 2, 2007

MAIL STOP AF
COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

**PRE-APPEAL BRIEF REQUEST FOR REVIEW
AND STATEMENT OF REASONS**

Sir:

Applicant requests review of the Final Rejection in the above-identified application. No amendments are being filed with the request. This request is being filed with a Notice of Appeal. The following sets forth a succinct, concise, and focused set of arguments for which the review is being requested.

CLAIM STATUS

Claims 1-10 and 13-32 are pending in the application and stand rejected. Claims 13, 14, 19, 21 and 22 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Basham et al., U.S. Publication No. 2002/0035665 (Basham). Claims 1-5, 15, and 23-28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Basham in view of Sokolov, U.S. Patent No. 6,018,789 (Sokolov). Claims 9, 10, 31 and 32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Basham in view of Sokolov and further in view of Mimatsu, U.S. Publication No. 2004/0111485 (Mimatsu). Claims 16-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Basham in view of common practice in the art. This rejection is respectfully traversed.

REMARKS

The present invention, as set forth by independent claim 13, relates to a data storage device which includes a data storage media for storage of data, a processor for controlling the data storage device, a write once ready many (WORM) pointer memory coupled to the processor for storage of a WORM pointer, and a host device interface coupled to the processor for receiving commands from a host computer. Claim 21 relates to a data storage system of similar scope.

Basham relates to data storage subsystems that employ portable serial data storage media. In the data storage subsystem, drive level processing renders the data storage media as a write once read many (WORM) media, while permitting limited overwriting of trailing data. More specifically, the drive-level processing automatically advances a write append limiter as data is written, and prevents changes to data occurring before the write append limiter. Limited overwriting of data at the end of media is permitted since the write append limiter lags the current write location by the margin of a write allowance index.

The Examiner refers to the write append limiter 151 of Basham when setting forth that Basham discloses a WORM pointer. When discussing the write append limiter 151, Basham sets forth:

In response to the write request, the drive 108 proceeds to store the write data so as to preserve certain previously stored data, as explained below. In general, the drive 108 treats data occurring before the write append limiter as being WORM, thereby permitting overwriting of data occurring after the write append limiter. More particularly, with reference to FIG. 4, after step 406 the drive engine 110 references the write append limiter 151 and write allowance index 152 stored upon the cartridge (step 410). The write append limiter 151 identifies a sequential location on the cartridge before which data is not permitted to be altered (Basham, Para 0049, lines 3 – 12).

Accordingly, the write append limiter of Basham does not disclose or suggest a WORM pointer as claimed in claims 13 and 21

More specifically, Basham, taken alone or in combination, does not teach or suggest a data storage device which includes a data storage media for storage of data, a processor for controlling the data storage device, a write once ready many (WORM) pointer memory coupled to the processor for storage of a WORM pointer, and a host device interface coupled to the processor for receiving commands from a host computer, all as required by claim 13 and as

substantially required by claim 21. Accordingly, claims 13 and 21 are allowable over Basham. Claims 14 - 20 depend from claim 13 and are allowable for at least this reason. Claims 22 and 23 depend from claim 21 and are allowable for at least this reason.

Claims 1-5, 15, and 23-28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Basham in view of Sokolov, U.S. Patent No. 6,018,789 (Sokolov).

The present invention, as set forth by independent claim 1, relates to a method for writing data on a data storage device which includes the data storage device receiving a write command, obtaining a starting logical block addresses (LBA) and a LBA transfer length from the write command, obtaining a first write once ready many (WORM) pointer from a WORM pointer memory, and in response to the starting LBA being greater than or equal to the WORM pointer, executing the write command. Claim 24 relates to an article of manufacture of similar scope.

Basham is discussed above.

Sokolov discloses a disk drive which provides a method of adaptively managing a cache segment divided into chunks by defining an unavailable data type to be stored in an element of a chunk array which indicates that the chunk is not available, and defining an available data type to be stored in an element of the chunk array that indicates the chunk is available and that indicates the number of consecutive chunks that are available. Sokolov further discloses that a logical block address uniquely references a location of data on a disk drive.

However, neither Basham or Sokolov disclose or suggest a WORM pointer which provides an inventory of LBAs where WORM data can be written within a data storage media.

More specifically, Basham and Sokolov, taken alone or in combination, do not teach or suggest a method for writing data on a data storage device which includes the data storage device receiving a write command, obtaining a starting logical block addresses (LBA) and a LBA transfer length from the write command, obtaining a first write once ready many (WORM) pointer from a WORM pointer memory, and in response to the starting LBA being greater than or equal to the WORM pointer, executing the write command., all as required by claim 1 and as substantially required by claim 23. Accordingly, claims 1 and 24 are allowable over Basham and Sokolov. Claims 2 - 10 depend from claim 1 and are allowable for at least this reason. Claims 25 - 32 depend from claim 24 and are allowable for at least this reason.

Claims 9, 10, 31 and 32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Basham in view of Sokolov and further in view of Mimatsu, U.S. Publication No. 2004/0111485 (Mimatsu).

The present invention, as set forth by claims 9 and 31, relates to sending a device type to the host computer in response to receiving a first inquiry command from a host computer,. The present invention, as set forth by claims 10 and 32, relates to sending a worm pointer to the host computer in response to receiving a second inquiry command from the host computer.

Basham and Sokolov are discussed above.

Mimatsu relates to the various functions that a disk array provides to a user. Within Mimatsu, when a function of a storage device is controlled from a computer, a common interface for controlling the function of the storage device is provided. The common interface manages an interrelationship between a storage area recognized by a host computer and a storage area provided by the storage device and associates a storage area which becomes a target of a function control instruction with the storage device that provides the storage area. Mimatsu further discloses that a disk volume is managed using a disk volume management table. Each disk volume can include device type information. (See e.g., Mimatsu ¶ 0051.)

However, Basham, Sokolov and Mimatsu do not disclose or suggest, taken alone or in combination, in response to receiving a first inquiry command from a host computer, sending a device type to the host computer, as required by claim 9 and 31 or in response to receiving a second inquiry command from the host computer, sending a worm pointer to the host computer as required by claims 10 and 32.

Claims 16-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Basham in view of common practice in the art. This rejection is respectfully traversed.

While the use of certain types of memories to store information may in fact be known in the art, the use of such a memory in combination with the method and apparatus as claimed is not disclosed or suggested by the combination of Basham with the common practice set forth by the Examiner.

In view of the arguments set forth herein, the application is believed to be in condition for allowance and a notice to that effect is solicited. Nonetheless, should any issues remain that might be subject to resolution through a telephonic interview, please telephone the undersigned.

I hereby certify that this correspondence is being electronically submitted to the COMMISSIONER FOR PATENTS via EFS on October 2, 2007.

/Stephen A. Terrile/

Attorney for Applicant(s)

Respectfully submitted,

/Stephen A. Terrile/

Stephen A. Terrile
Attorney for Applicant(s)
Reg. No. 32,946